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Challenging the Environment: Uncertain Pathways to Transformation in/for India

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Introduction: the Problematic of the Environment in India

The renowned Cambridge economist Joan Robinson is credited with saying that "whatever you can rightly say about India, the opposite is also true" (Sharma, 2016). This is applicable to the field of environment and ecology as to almost any other sphere of life in the Indian sub-continent. Post-colonial India has seen some of the most innovative, culturally rooted, and globally impactful environmental movements such as the Narmada Bachao Andolan against large dams (Baviskar, 1995), the Chipko movement against deforestation in the western Himalayas (Guha, 2000), and the movement which halted the Silent Valley project in southern India (Zachariah and Sooryamoorthy, 1994). These and other environmental movements have come to be studied in great detail with lessons drawn for sustainable development, popular mobilization, environmental science, and environmental justice. They have been globally influential for social science theory and development policy, and an inspiration to environmental movements around the world. Simultaneously India has also been witness to several disasters that have been caused by anthropogenic factors combined with natural planetary processes—frequent flooding leading to immense loss of life, property, and livelihoods for millions across the country, industrial disasters of which the Bhopal Gas Tragedy of 1984 is the most infamous, air and water pollution resulting in heavy casualties and morbidity for hundreds of thousands, and

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frequent droughts exacerbated by climate change, ground water depletion, and deforestation.

While there are excellent examples for community based natural resource management and collective choice arrangements in forestry, water, and pasture (Menon *et al*., 2007), there have also been a very large number of conflicts ranging in scale from intra and inter-village contestation to inter-state, and bi-lateral conflicts across South Asian nation-states. If there is a tendency to ignore science, expert reports, and indigenous knowledge systems in natural resource management, there is also a very rich tradition of social science and natural science research on environment that critiques the colonial basis of environmental science (Grove and Grove, 1996; Sivaramakrishnan, 2008; Rangarajan, 1999), that argues from the vantage point of culturally rooted resource dependencies of indigenous communities (Agrawal, 1999), and has contributed to policy and governance debates in ways that recognize the complexity of socio-environmental and socio-technical systems (Bavinck and Jyotishi, 2014).

One of India's most well-known environmental historians and sociologists Ramachandra Guha remarked that "India may sometimes be the most exasperating country in the world, but is always the most interesting" (Guha, 2017). While this stems in part from the contradictions outlined above, it also points to the diversity of issues, problems and perspectives when it comes to environmental matters. With millions of people living in and dependent on forests, rivers, mountains, deserts, coastal wetlands, and agricultural land across diverse agro-ecological zones, we perceive a variety of customary and historically evolved governance regimes for resource management. These regimes have been influenced by colonial rule, socio-political struggles, post-colonial policies to ensure equity and access, and more recent neo-liberal policy shifts that legally and illegally seek to encroach upon or alienate people from the habitats in which they live and eke out livelihoods such as fishing, forestry, agriculture, pastoralism, and artisanal crafts. This diversity exasperates policy makers while also offering rich insights on the relationship between environmental knowledge, livelihood dependence, community and collective governance, and the evolution of practices appropriate to diverse ecological systems. The country's strong democratic tradition has allowed for an incredible range of social movements to flourish around environmental issues, while simultaneously there has been extremely callous disregard for large-scale violation of indigenous rights, environmental laws, and sustainable development models by successive political regimes and economic models.

Equity, Access, and Conflict: Framing the environmental issue in India

All of this makes for an extremely rich global South perspective that reflects in the social science scholarship around environmental problems in India. Starting with a robust critique of "colonial science" (Kumar, 2017) that was deeply exploitative of both humans and nature, scholars from India and elsewhere researching environmental dynamics in South Asia have drawn attention to the colonial legacies of current environmental management and governance practices, richly documented the local level evolution of community based natural resource governance, participated in experiments to decentralize and democratize resource governance in water, forestry, agriculture, and pastoral sectors, studied the presence and types of a bewildering variety of property rights especially related to the commons, pointed out how class, caste, ethnic, and gender inequality relates to environmental governance, resource access and conflicts, and generated theoretical insights in areas ranging from feminist political ecology to conservation ethics and environmental justice.

Among key theoretical, conceptual, and analytical contributions that emerged from environmental movements and social science of ecology in India, a few deserve mention. Gadgil and Guha—whose collaboration established a science and evidence based environmental social sciences in/for India, identified problems of equity and access around natural resources as a key challenge confronting India (Gagdil and Guha, 1993 and 1995). Access to natural resources for food, fodder, firewood, housing, tools and implements, medicines, and livelihoods defines the well-being for tens of millions of people in India, where resource access is determined by factors relating to political power, class, education and middle class status, urban-rural location, region, caste and ethnicity, and technology. Guha and Alier also distinguished between the politics of conservation which is seen as a more 'western' orientation to the environment, whereas conflicts over access to resources for meeting basic and subsistence needs as well as urban, industrial, tourist, recreational, and other uses are seen as a defining characteristic of environmental movements in India (Guha and Alier, 2013). Other significant contributors to environmental sociology such as Amita Baviskar (2011) have coined the term "bourgeois environmentalism" to refer to the elite and middle class attitudes, ideologies, and consumption needs that influence environmental policies and laws, rather than the subsistence, health, life, living, and livelihood needs of the rural and urban poor and working classes.

Gadgil and Guha (1995) pointed to the binary between omnivores (industrial bourgeoisie, rural rich, urban middle classes) and "ecosystem people" (resource

dependent communities such as fishers, foragers, peasants and agricultural labour, pastoralists, and foresters) that result in alienation of huge numbers of people from their habitats and who then become "ecological refugees". They also result in rural-urban transfer of minerals, water, agricultural, water, fishery, and dairy products, and intense environmental exploitation and ecological degradation. Environmental movements by the middle class and elites reflect a, full belly environmentalism, whereas the movements of the poor are motivated by, empty stomach environmentalism, (Guha and Alier, 2013; Guha 2002).

Social scientists and environmental activists in India have also paid significant attention to the gendered nature of environmental exclusion, resource access problems, and participation in environmental governance. Pioneering work in Ecofeminism (Shiva and Mies, 1993) draws from the work of many anthropologists and sociologists who have shown the kinship based management and passing down of environmental knowledge and ecological practices (Dube, 1986). Beyond positing a connection between capitalism and patriarchy, between the oppression of women and the exploitation of nature, ecofeminism also brought to the fore perspectives on the ethic of care that governs the management and use of ecosystems. Within the field of gender and development and feminist economics, scholars have also pointed to the relationship between property rights for women and the efficiency and sustainability of resource use (Agarwal, 1994). In significantly contributing to the feminist political ecology debates, Sumi Krishna introduced the concept of genderscapes to critically analyze community rights in natural resource management (Krishna, 2009). Arguing against an instrumental use of women for conservation purposes, her work integrates care giving practices of women with caring practices towards forests, and the gender dimensions of biodiversity management.

Climate change and variability—both natural and anthropogenic, bring new risks (Dubash, 2012). With a long coast line spread across several states in the Bay of Bengal and Arabian Sea, exposure to frequent storms and cyclones, and the storm surge they bring has increased with increased warming of the ocean surface temperature. The frequency of droughts and high variability in the Indian Summer Monsoon—the mainstay of Indian agriculture and economy, aggravates agrarian crisis in a situation where suicides by farmers are a permanent phenomenon, over 60% of the population depend on agriculture, and there is severe over-exploitation of ground and surface water.

The scholarship, activism, and mobilization around environmental dynamics in India, as is evident from the above brief outline are rich, authentic, and nuanced. There is in addition a fairly strong tradition of scholars, environmental activists and community leaders coming together to

discuss and provide feedback on policy matters, take matters to courts and environment tribunals, and influence the public discourse on the environment. These include the Forest Rights Act of 2006, the different iterations of the Coastal Regulation Zone norms, and Groundwater regulation in different states of the country. A noteworthy element of Indian environmental scholarship on water management, forestry, agriculture, and coastal issues has been to critique narrow technocratic, engineering, or positive science approaches to environmental problems, and instead underline ecological, socio- political, administrative and legal concerns when it comes to socio-environmental relationships and governance predicaments.

Challenging the Environment or Environmental Challenges?

Despite the immense power of the state and that of market and capital in recent times, India's environmental and decentralized governance systems, the plurality of environmental laws, and a strong tradition of social movements have resulted in several short and long term successes to thwart further alienation from and encroachment upon marginal environments and fragile ecosystems on which the ecosystem people depend. However the immediate environmental challenges emerge from recent political regime shifts that ruthlessly suppress these movements, seek to eliminate or dilute environmental laws (Chouhan *et al.*, 2017), centralize environmental decision-making, and disregard significant disaster risks from wanton and state sponsored environmental destruction. The on-going and proposed projects related to Special Economic Zones, dams, ports, transportation infrastructure, blue economy projects in the Indian Ocean, rapid deforestation, dilution of Environmental Impact Assessment laws, and the weakening of coastal regulation zone norms—these challenge the environment in ways that destroy socio-ecological resilience, and generate multiple risks for disasters such as flooding, droughts, storm surge, heat waves, and extreme precipitation events (Venkataraman et al., 2018); they threaten millions of livelihoods, and displace hundreds of thousands from their living spaces in and around forests, coastal wetlands, pasture and grassland, mountains, and agricultural land.

Drawing from two ongoing research projects[2], the discussion below focuses on issues of claims and contestations around coastal commons, and problems

2. A. Norwegian Research Council project on "Climate Change, Uncertainty, and Transformation", sponsored by Norwegian Research Council, in collaboration with IDS, Sussex, and Norwegian University of Life Sciences (2015-17). In particular I would like to thank Lyla Mehta, Hans Nicolai Adam, Alankar, NC. Narayanan, Mihir Bhatt and Synne Movak who were involved in the Mumbai part of the study. Wherever relevant, published work with these partners or their unpublished reports are cited. A follow-up project funded by the Transformation to Sustainability Call of Belmont Forum is ongoing. The project is

of uncertainty and transformation in response to climate change and ecological degradation. These framings, it is argued, offer a way of comprehending and working out solutions to the challenges thrown to the environment by intense human exploitation of natural resources, and the pushback by state and capital against hard-won environmental laws and policies. In the process they also point to the kinds of challenges India is likely to face in the near future.

Claims and contestations around coastal commons–a legal pluralism approach

India has a large coast in the Indian Ocean along the Bay of Bengal in the east and the Arabian Sea in the west. The coasts are densely populated, have mega-urbanized regions, are commercial and economic powerhouses with information technology, finance, entertainment, and industries located in clusters around major Indian metropolitan cities such as Chennai, Kolkata, Mumbai and Kochi. The coasts have also been home to millions of fisherfolk—artisanal fishers who have historically enjoyed rights over coastal villages, wetlands, estuaries, mangroves and mudflats as de facto or de jure commons. On the one hand there has been a transformation of this sector due to the entry of trawl fishing within the fishing community and from large multinational companies (Scholtens and Bavinck, 2013). On the other hand new claims are made over coastal regions for urbanization, real estate, ports, power plants, off shore oil and gas, blue economy projects such as deep sea mining and solar and wind farms in the sea, recreation, and special economic zones. In the context of climate change related coastal erosion and coastal accretion, seal level rise, increase in extreme events such as storms and cyclones, storm surge, acidification, and warming of sea surface temperature, artisanal fishers face livelihood depletion due to decline in marine biodiversity, marine pollution, increased competition for fishing, and reduced access to fishing grounds. In the words of Bakker *et al*. (2010) coastal ecosystems represent a "locality of value". Local populations dependent on marine resources and fishing grounds face competition and contestation as new actors including the state start making claims over coastal marine and territorial resources. Claims, contestation, and counter-claims lead to conflicts over definitions of value, the legitimacy of stakeholders, and ambiguities in customary and formal legal rights over use, control, and governance of coastal resources.

titled '*Transformation as Praxis: Exploring Socially Just and Transdisciplinary Pathways to Sustainability in Marginal Environments*'. B. Research Project on "Contesting the Coastal Commons: The Changing Socio-legal position of Fishing populations in Tamil Nadu and Maharashtra", ICSSR-NWO Bilateral Programme (INDIAN COUNCIL OF SOCIAL SCIENCE RESEARCH and Netherlands Organisation for Scientific Research, 2016–18). I would like to acknowledge the contribution of my research partners Maarten Bavinck and Ajit Menon.

Insecurities and ambiguities result in overlapping and multiple claims over resource rights originating from a range of normative, customary and legal regimes. In the presence of multiple sources and claims to legitimacy, and the opportunity for forum shopping, claims and contestations reflect a new legal geography of commons, public goods, and private property rights (Parthasarathy, 2014). Our studies in the Mumbai Metropolitan Region reveal several "flashpoints"—sites of contestation and conflict. These reveal multiple imaginaries of development, sustainability, normativity, legality, and rights. While in some cases marginalized coastal communities such as the Koli fishers are able to retain access over coastal and marine resources, at other times the power of state, capital, or even the mafia supersedes local control over the environment. As science, local knowledge, the courts, the National Green Tribunal, and urban planning bodies get into the act of claims and contestations against environmentalists and fisher associations, new possibilities of framing and imagining the environmental problematic emerge. These offer challenges both for comprehending complex environmental flows, and for a kind of policy making that is centrally focused on environmental justice.

Uncertainty and climate change–environmental degradation, livelihoods, equity and justice

Among the many impacts and potential response to climate change is the 'wicked' problem of uncertainty. The variability and uncertainty in precipitation, seasonal changes, temperature, or extreme events affect both lay people and those directly dependent on the environment for livelihoods—foresters, foragers, pastoralists, fishers, herders, and farmers. However, policy makers, state agencies, climate scientists and community organizers may have their own take on climate related uncertainty which translate into action or lack of action to address climate change impacts (Mehta *et al*., 2019). Uncertainty is understood, interpreted, mediated, experienced and explained in different ways by diverse sets of stakeholders. These uncertainties may relate to accuracy in prediction, scale and intensity of an even or climate change impact, and is often exacerbated by past and ongoing environmental changes, state policy and laws, population dependence and exploitation of an ecosystem or coping/adaptive capacity. Our research focused on three sites in India a) the western Indian urban region of Mumbai, which is facing frequent flooding, high exposure to climate related extreme events, sea-level rise, and the consequences of rapid ecological destruction, especially mangroves, salt pans, and wetlands; b) the Kutch region in western India, which is exposed to droughts in an arid environment, increasing variability in rainfall, environmental change adversely impacted by land use change for commercial

purposes, coastal erosion and salinity ingress, and a policy neglect of the livelihood needs of pastoralists and other resource dependent communities; the trans-border Sundarbans—a large patch of Mangrove forests in a delta spread across the state of West Bengal in India and Bangladesh and home to the Royal Bengal Tiger (see Bhatt *et al*., 2018). Already exposed to the risk of floods, changes in storm frequency and intensity, climate change and rapid environmental degradation have resulted in fast sinking and eroding islands.

Research in these three sites revealed that sections of the population most vulnerable in terms of income, class, geographic location, caste or ethnicity and gender, are usually the worst affected by uncertainty. Climate change tends to aggravate existing uncertainty related to incomes and livelihoods, while ecological change and policy neglect together with lack of political and social power marginalize them further. We adopted the perspective of transformation (Pelling 2010) to assess how best these uncertainties can be overcome or reduced. In adopting the transformation lens, we critiqued the technocratic and narrow managerial understanding and solutions of government agencies; at the same time we highlighted the limitations of quantitative assessments and models of climate scientists which politicians and bureaucrats found difficult to evaluate and translate into risk reduction strategies. A closer attention to the ground realities of those most affected by climate uncertainties requires an appreciation actual lived experiences and diverse socio-ecological systems that foster practices of coping and adaptation. An integrated focus on ecological, epistemic and political economy related uncertainty (Mehta *et al*., 1999) is required to address the new complex and compound risks in the selected sites. Meeting such environmental challenges also require a trans-disciplinary approach which can bring "to the fore hidden and alternative perspectives and solutions whilst highlighting the need to address the power imbalances that prevent alternatives ways of valuation and epistemic diversity, so urgently required to address growing climate related uncertainties" (Mehta *et al*., 2019: 1545).

The transdisciplinary approach and a focus on uncertainties and transformation also indicate directions towards possible alternate sustainable and socially just pathways. These include more integrated urban planning that frontally takes on board environmental risks and exposures, more pro-poor and livelihood focused adaptation mechanisms, and a stronger network between scientists, policy makers, and people in the direct path of uncertainty induced vulnerabilities. The idea of transformation that is necessarily deployed in such alternate pathways will need to evaluate and tackle uncertainty across the different socio-ecological registers of environment, livelihoods and epistemologies (Mehta *et al*., 2019).

The challenges to environmental governance and just transitions towards sustainability in India are hence epistemological as well as practical; they are political but also need to be transformational for lasting change. And finally these challenges require a transdisciplinary approach that recognizes the urgency of anthropogenic threats to the environment, a recognition that India's problems derive from larger structures of inequality and processes of uncertainty governed by political economy, ecological shifts, and dominant knowledge systems.

Figure 1 – Protest rally by the National Fishworkers Forum in Mumbai against coastal projects in violation of the Coastal Regulation Zone norms
Picture Credit – Hemantkumar Chouhan

Figure 2 – A pastoralist in Kutch, Gujarat affected by climate change, droughts, and environmental degradation
Picture Credit – Shibaji Bose

Figure 3 – An island in the Sundarbans severely affected by coastal erosion and land subsidence
Picture Credit: Shibaji Bose

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